4.1.1 Scope

Friction ridge examinations are conducted using the ACE-V Methodology. ACE-V refers to Analysis, Comparison, Evaluation, and Verification. The ACE-V method utilizes quantitative and qualitative analysis. This methodology is applied to all examinations of prints including latent prints to known impressions and known impressions to known impressions.

4.1.2 Evidence

Submitted or laboratory developed latent prints
Known impressions
Postmortem impressions

4.1.3 Instruments/Equipment

Comparison magnifier
Ridge counters
Comparison software

4.1.4 ACE-V

ACE-V is an acronym for Analysis, Comparison, Evaluation, and Verification. This methodology is a modified version of hypothesis testing utilized in latent print examinations.

4.1.4.1 Analysis

Analysis is the examination of a friction ridge impression to determine suitability for comparison. Analysis occurs whether or not a comparison is conducted. The analysis phase includes evaluation of level one, level two, and level three detail. The initial analysis phase of latent prints determined suitable for comparison shall be documented using comparison software.

Level one detail consists of overall ridge flow and pattern type. Level one detail may be used to determine anatomical source. Anatomical source should be documented if it can be determined. Pattern type of the finger or area of the palm should also be noted. Additional information such as the presence of a core or delta may also be noted. Level one detail is not sufficient for identification but may be used to exclude.

Level two detail consists of the individual ridge detail within an impression. This includes the presence of ridge path deviation (e.g., ridge ending, bifurcation, and dot) and the absence of ridge path deviation (e.g. continuous ridge). The presence and clarity of characteristics will be documented. Characteristics observed at a high degree of confidence will be marked in green. Characteristics observed at a lower degree of confidence will be marked in yellow. Level two detail is used in conjunction with level one detail for identification and for exclusion.

Level three detail consists of the structure of individual ridges. This consists of shape of the ridge, relative pore position, and other specific friction ridge skin morphology, such as creases, scars, or blisters. Level three detail observed may be marked on the analysis documentation.

Submitted latent prints that are determined unsuitable for comparison shall be described as such. The documentation will include an explanation of the reason for insufficiency and shall be noted on the Submitted Latent Worksheet.

A second qualified examiner must review latent prints that are determined to be of no value for comparison. This will be documented in the examiner's case notes.

4.1.4.2 Comparison

A comparison is the side-by-side examination of friction ridge detail to determine if the information in the two prints is in agreement or disagreement based upon detail, relative location of detail, and spatial relationships.

Comparison is performed in an objective manner. The examiner systematically searches the known standards in an effort to exclude them as the source or to locate a known impression that is consistent with the detail observed during analysis.

During the comparison phase, an examiner may determine the latent print in question does not have the clarity or detail necessary to effect an identification. Should it occur that a latent print is deemed to be of no value for comparison after the analysis phase,

this must be documented in the examiner's case notes. A second examiner must also verify this determination.

When the appropriate information is provided for individuals listed on the TBI Request for Examination form, the examiner should determine if there are known impressions on file with the TBI CJIS Division. This is unnecessary if all latents are identified to other individual(s) due to AFIS/NGI searches.

If there are known impressions on file, the finger and/or palm print card is printed from the database or requested from TBI CJIS Division. Once received, the known impressions are assigned an exhibit number. The appropriate chain of custody is documented in the LIMS system and a TBI Request for Examination form is completed.

If known impressions are not on file, the examiner must document this in the case file as well as the date the database was checked.

A legible copy of the known impressions must be retained in the case file.

4.1.4.3 Evaluation

During the evaluation phase, an examiner assesses the value of the details observed during the analysis and the comparison phases and reaches a conclusion. There are three conclusions that can be reached: identification, exclusion, and inconclusive.

4.1.4.3.1 Identification

Identification is the conclusion reached when an examiner determines that the data (characteristics) between two friction ridge impressions are in agreement and originated from the same source.

The identification conclusion is reached when the friction ridge impressions have corresponding ridge detail and the examiner would not expect to see the same arrangement of details repeated in an impression that came from a different source.

4.1.4.3.2 Exclusion

Exclusion is the conclusion reached by an examiner when two friction ridge impressions are in disagreement and did not originate from the same source.

An exclusion can be determined by using level one or level two detail.

If level one detail is used to exclude, sufficient pattern and orientation indicators must be present and absent of significant distortion.

4.1.4.3.3 Inconclusive

An inconclusive determination occurs when the source of a print cannot be identified or excluded.

An inconclusive decision is appropriate when:

A) the area of friction ridge detail needed for comparison within the known impressions is not present or the known impressions contain areas not suitable for comparison (e.g. distortion present). In this scenario, the receipt of better known impressions could facilitate a more conclusive opinion from the examiner (i.e. identification or exclusion).

B) some amount of information between the latent and known impression is in agreement; however, it is not sufficient or discriminating enough to arrive at an identification conclusion. In this scenario, clearer/better known impressions would not assist the examiner in arriving at a more conclusive opinion (i.e. identification or exclusion).

4.1.4.4 Case documentation

If an identification is determined, the examiner will clearly label the identified latent with the following minimum information: initials of the name appearing on the known impressions, area of identification (i.e. finger number, right or left palm, etc.), and examiner initials. The known impressions will also be labeled to show the correlation between the area of identification and the

latent print. A legible copy of the identified latent print must be retained in the case storage file.

Comparison software shall be utilized when identifications are effected between latent prints and known impressions. Characteristics in common between the latent and known impression that were originally observed during the analysis phase will be annotated in the color red. Any characteristics observed to be in common after initiation of the comparison will be annotated in the color cyan.

If no identification is effected in the case, the original latent prints will remain on file within the latent storage area unless return of the evidence is requested by the submitting agency. In the event the submitting agency requests the return of evidence, a legible copy shall be made and retained in the case file (Latent Storage File location) unless the statute of limitations has expired.

The evaluation must be documented in the examiner's case notes for each impression examined.

4.1.4.5 Verification

A verification is the independent application of the ACE methodology to verify the conclusions of the original examiner. The verifying examiner is not required to annotate the analysis or comparison phase of the examination.

All comparisons are subject to verification. All final conclusions pertaining to each compared latent print must be verified.

Verifications will only be conducted on comparisons performed by TBI Latent Print Examiners. If evidence submitted by an outside agency is marked in any way identifying it as being previously examined by another individual, that evidence will be handled in accordance with TBI written policies 10-2-001 and 10-2-004.

A case requiring verification will be transferred to the LP AFIS/Verification/Digital Image Storage cabinet. The verifying examiner will remove the case from the LP AFIS/Verification/Digital Image Storage cabinet. When verification is complete, the verifying examiner will return the case to LP AFIS/Verification/Digital Image

Storage cabinet where it will be retrieved by the original examiner. In certain circumstances it may be appropriate to transfer the evidence directly from person to person and bypass the cabinet. The transfers will be documented in the LIMS system.

If the verifying examiner agrees with the original examiner's conclusion of identification, he/she will initial the label placed on the identified latent print. The verifying examiner will also initial the documentation made by the original examiner on the known impressions and any generated side-by-side comparison software images.

For exclusions and inconclusive conclusions, the verifying examiner will initial the latent lift or image and initial the fingerprint or palm print card to indicate an examination was performed.

The verifying examiner will initial and date the Latent Print Case Progress worksheet in the appropriate location. The verifying examiner will also initial the applicable Evaluation Worksheets to indicate agreement with the initial examiner's final conclusions.

4.1.4.5.1 Blind Verification

In an effort to minimize a risk to impartiality of latent print comparison conclusions, the TBI Latent Print Unit has implemented a blind verification procedure.

Blind verification is the independent application of the ACE methodology to verify the conclusions of the original examiner. The conclusions of the original examiner are unknown to the verifying examiner in a blind verification.

Blind verification will be performed upon request of the original examiner or supervisor. The examiner, supervisor, or verifier should request a blind verification on any complex comparison; however, the examiner is permitted to request a blind verification on any comparison.

A blind verification is <u>required</u> on any case in which an AFIS or NGI "hit" results in a single identification to an individual. A blind verification is also <u>required</u> on any single source exclusion.

The original examiner will place the unmarked finger and/or palm print card(s) and the unmarked latent print(s) in a manila folder within the case folder and place the folder in the LP AFIS/Verification/Digital Image Storage cabinet. There should not be any worksheets contained in the manila folder. This evidence transfer will be documented in LIMS.

The supervisor and/or designee will serve as the moderator for the blind verification. The supervisor and/or designee will review the packet to ensure all items are unmarked.

The supervisor/designee will then assign the blind verification to an examiner. The verifying examiner will independently apply the ACE methodology and will then notify the supervisor/designee of their results. The applicable evidence will also be transferred from the verifier to the AFIS/Verification/Digital Image Storage cabinet or directly to the supervisor /designee for review.

Once the moderator determines an identification conclusion is in agreement, the verifying examiner will initial a label placed on the identified latent print by the original examiner. The verifying examiner will also initial the documentation made by the original examiner on the known impressions and any generated side-by-side comparison software images.

For exclusions and inconclusive conclusions, the verifying examiner will initial the latent lift or image and initial the fingerprint or palm print card to indicate an examination was performed.

The verifying examiner will initial and date the Latent Print Case Progress worksheet in the appropriate location. Any documentation generated by the verifying examiner will be included in the case file. The page numbers designating this paperwork will be indicated on the Latent Print Case Progress worksheet.

The evidence and case folder are returned to the original examiner.

4.1.4.6 Conflict Resolution

If the conclusions between the verifying examiner and the original examiner are in disagreement, the procedure for conflict resolution will be applied.

Procedure:

If there is a disagreement between the examiner and verifier regarding a conclusion, the two examiners will discuss the disagreement and review each other's comparison documentation if necessary to facilitate a resolution. If an agreement cannot be achieved, the supervisor or designee should be consulted for a final decision. It may become necessary to involve the Quality Assurance Manager and/or Crime Laboratory Regional Supervisor in the resolution process.

4.1.4.7 Unknown Deceased/Identity Confirmation

Postmortem impressions are frequently submitted for an identity confirmation (comparison to a presumed identity) or AFIS/NGI search if there is no presumed identity. These cases are expedited to facilitate the requesting Medical Examiner's ability to release a body from its custody.

The postmortem impressions are compared with the known impressions of the presumed identity and evaluated for positive identification. The comparison is then verified by a second qualified examiner. Refer to section 4.1.4.5 in this manual for the verification procedure. If the postmortem impressions are unsuitable for comparison, they will be reviewed by a second qualified examiner and the submitting agency will be notified.

If an identification is determined, the examiner will clearly label the postmortem impressions with the following minimum information: exhibit number of the known impressions and examiner initials. The known impressions will also be labeled with the following minimum information: exhibit number of the postmortem impressions and examiner initials.

Comparison software will be utilized when an identification is determined for postmortem impressions. A copy of this documentation shall be retained in the case file.

In the event the comparison results in an exclusion, or there is no presumed identity, an AFIS/NGI search is conducted. If the AFIS/NGI search generates a hit, the same comparison, evaluation, and verification steps will be performed.

Postmortem impressions should be photographed with a ruler included or digitally scanned prior to returning them to the Evidence Receiving Unit. A legible photocopy may be acceptable in lieu of a photograph or digital scan. This documentation will be retained in the Latent Storage Files.

When postmortem impressions are emailed to the TBI, the chain of custody will document the email chain and a printout of the postmortem impressions will be retained in the Latent Storage Files upon completion of the examination.